[P]

JACKSON H.

AN

ESSAY

ON

BREAD;

WHEREIN

The BAKERS and MILLERS are vindicated from the Aſperſions contained in Two *Pamphlets*;

ONE INTITLED

POISON DETECTED:

And the other,

The NATURE of BREAD honeſtly and diſhoneſtly made.

PROVING

The Impoſſibility of mixing *Lime*, *Chalk*, *Whiting* and *burnt Bones* in Bread, without immediate Diſcovery.

WITH

Plain and Eaſy Experiments to diſcover *Alum* and other Admixtures in Bread, inſtantly.

To which is added,

An APPENDIX; explaining the vile Practices committed in adulterating Wines, Cider, Porter, Punch, Vinegar, and Pickles.

WITH

Eaſy Methods to detect ſuch ABUSES.

By *H. JACKSON*, CHEMIST.

——*Sed ignotis perierunt mortibus illi.* HOR.

Who dares think one Thing, and another tell,
My Heart deteſts him as the Gates of Hell. Pope's Hom.

LONDON:

Printed for J. WILKIE, behind the *Chapter-Houſe*, in *St. Paul's Church-Yard.* 1758.

Price One Shilling.

A

NEW TREATISE

ON

BREAD.

THE Obſervations which I made ſome Years ago on the various Mal-Practices committed by thoſe whoſe Buſineſs it is to prepare the public Viands, had almoſt determin'd me to publiſh my Sentiments thereon; but Time not permitting me to make ſome Experiments previous to ſuch a Work, I drop'd the Deſign; till a few Months ago, being importuned by a very eminent Phyſician to try ſome Experiments, and deliver him my Sentiments thereon, I reſumed the Subject: But juſt at the Time I was endeavouring to analyze Bakers Bread, I was agreeably ſurpriſed to find by the public Papers that my intended Buſineſs was anticipated by a Phyſician; the Dignity of whoſe Profeſſion, I flattered myſelf, would add Authority to his Arguments, and attract the public Attention more than any Thing I might advance; being ſenſible of my own Inſufficiency as

an Author. I purchaſed the Treatiſe, and acknowledge that the Contents not only ſurpriſed, but amazed me, when I reflected on the perfidious Arts of Bakers in dealing ſuch ſilent Deſtruction amongſt their Fellow Creatures. I had ſcarcely ever ſuſpected any of the Villainies mentioned by this Author and aſſerted as undoubted Facts, and the Alarm determined me to be ſatisfied of the Truth. Ten Years ago I conceived an Averſion to *London* Bread, on account of the Alum, which, a Baker ingenuouſly informed me, was frequently uſed in the Compoſition; this Confeſſion influenced me ſo much, that, ſince that Time, I have confined myſelf to a very inconſiderable Quantity, having diſpenſed with Greens, Roots and Salads as a Subſtitute. A very ſingular Inſtance confirmed my Prejudice againſt Bread: A Friend of mine, a great Fancier of *Canary*-Birds, had loſt a great Number of thoſe innocent, harmonious Creatures, which he attributed to the Salt in Bread, grated very fine together with Eggs boiled hard, for their Diet in Breeding; this Compoſition was frequently diſpoſed to turn ſour, from whence he infer'd the tender Brood might be griped and conſequently deſtroy'd: I informed him, to his Surpriſe, that the ill Effects might more probably be aſcribed to the pernicious Quality of Alum baked in the Bread; he exchanged his Baker, and preſerved the remaining Stock: But I have been ſince convinced, that the Miſchief aroſe from the Acidity the Bread had contracted by lying too long in Leaven, which frequently enſues in warm Weather, eſpecially when the Yeaſt

Yeaſt is bad, notwithſtanding the Vigilance of the Baker. But altho' Alum principally occaſioned my Diſlike to Bread, yet I never ſuſpected that Lime, Chalk, Whiting, and burnt Bones were any of its conſtituent Parts: Certainly the moſt ſervile abandon'd Wretch could not be ignorant of the pernicious Effects ariſing from ſuch odious Admixtures; the Practice of which would render him more deteſtable and dangerous than the lurking Aſſaſſin.

I find, however, that the Aſſertions of this Author are not implicitly to be depended upon. I know not who he is; but whoever he is, I ſhall endeavour to demonſtrate, that his malevolent Suggeſtions have occaſioned more Miſchief by exciting Doubts and Miſtruſts, and inflaming the Minds of the People, than can poſſibly ariſe from the contaminated Bread of the Bakers

I expected, at leaſt, that the Author would have confirmed his Obſervations by a Set of uſeful Experiments, whereby the Public might avoid the *detected Poiſon* and the ABUSES OF BAKERS; but on the contrary, I was amuſed with a ſpeculative Diſquiſition of the medicinal Properties of Alum, Lime, *&c.* and inſtead of the *Abuſes* of *Bakers*, was entertained with a phyſical ABUSE OF BAKERS.

As the Bakers are principally aimed at in this Pamphlet, it being doubtleſs intended to extirpate, as well as expoſe their pretended Villainy, the Stile ſhould have been plain and familiar, as a literary Education is not eſſentially neceſſary to their making of Bread; and others of a ſuperior Claſs have been

not a little perplexed to inveſtigate the true Meaning of ſome hyperbolic Expreſſions, of which the firſt twelve lines afford ſuch an Example, that a Baker at his Club, expreſſed great Concern, that the Book was not tranſlated into *Engliſh*. This Reflection I hope will ſufficiently plead for the Simplicity of Diction in the following Sheets, which are publiſhed with a View to aſcertain the Purity and Impurity of Bread, thereby to calm the Perturbations of the Publick, and to convince them how injuriouſly the Bakers have been treated by the two Authors upon Bread; not only on account of the Falſity of Accuſations, but by branding them with the moſt unparallel'd Infamy.

I ſhall endeavour to confirm my Obſervations with plain and eaſy Experiments, whereby every Individual may readily diſtinguiſh good Bread from bad; which Method muſt certainly redreſs the Grievance more effectually than the Execution of all the penal Laws in force. What Man will eat Lime or Alum mixed with Bread, if he knows how to detect it? If he is ignorant, let Experiment teach him.

Some Truths are not by Reaſon to be try'd,
But we have ſure Experience for our Guide.

DRYDEN.

The Author of *Poiſon detected*, tells us in *Page* 7th, 'That good Bread, that moſt ſubſtantial and 'principal Part of human Food, ought to be 'compoſed of Flour well kneaded with the lighteſt 'Water, ſeaſon'd with a little Salt, fermented with 'fine Yeaſt or Leven, and ſufficiently baked with

'a pro-

'a proper Fire. But inſtead of this wholeſome 'Bread, the Craft of iniquitous Bakers has found 'out a more advantageous Method of making this 'Food, by the miſchievous Admixture of many 'pernicious Ingredients to increaſe its Weight, and 'deceive the Buyer by its fraudulent Fineneſs. 'Lime, Chalk, Alum, *&c.* (meaning Whiting 'and burnt Bones) mix'd up with Flour, Yeaſt, 'Salt, and Leaven, in certain Proportion, are 'conſtituent Parts of that moſt common Food, to 'which, in the City of *London*, the deluded Inha-'bitants give the Name of Bread.'

Such daring Aſſertions are ſuitable to the Character of an anonymous Author; but had he informed us what that Proportion is, it would have been more ſatisfactory; for my own Part, I have not been able to inveſtigate the leaſt Proportion of any foreign Ingredients in Bread, except Alum; I have carefully examined the Bread of more than a hundred different Bakers, and have been unable to diſcover the leaſt Particle of Lime, Whiting, *&c.* and I am pretty certain that if any of their Bread had been mixed with only a minute Portion of ſuch Subſtances, it could not have eſcaped my Reſearches. But it is abſolutely impoſſible for either Miller or Baker to add any ſuch Materials to Flour and Bread without an immediate Diſcovery; for if Lime, Whiting, Chalk, or burnt Bones, be ever ſo finely powder'd, nay levigated, and mixed with Bread, yet they will manifeſt themſelves by a Grittineſs in the Mouth. I am not inſenſible of the Grittineſs of Flour occaſioned by the Negligence of the Miller, for when the

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Mill-Stones are worn ſmooth, they are obliged to clear and repair them with proper Tools; and if the ſandy Particles are not perfectly ſwept away, the Flour which is next ground proves gritty. The Miller could not grind the Ingredients ſufficiently fine amongſt the Wheat, and the groſs Particles of any of them would paſs the Cloth with the Flour; the Bakers would ſoon diſcover the Fraud in ſetting their Spunge, as they phraſe it, and it would be viſible enough in the finer Puffs of the Paſtry-Shops. Beſides, if ſuch Ingredients coſt nothing, and the Baker is capable of the Villainy, yet the Expence of powdering, ſifting, or otherwiſe rendering them fine, would thus prove more expenſive than Flour at the preſent extravagant Price. This wou'd be making the Cure worſe than the Diſeaſe; a Practice more frequent amongſt *Phyſicians* than Bakers.

Admit the Poſſibility of theſe Mixtures, to what Purpoſe could they tend? If they are practis'd with a View to increaſe the Weight of Bread, and to ſave an equal Proportion of Flour, large Quantities muſt be us'd, and if the Proportion of one to * ſix be the Standard, the Bread would turn out ſo gritty, that the very Dogs would ſpurn it, and the Eye might perceive it without Aſſiſtance, in the hard Surface of a Loaf; as Experience will convince any incredulous Perſon.

The Baker's Profits could not be increas'd with ſuch ridiculous Subſtitutes. Such dry abſorbent Earths, introduc'd to ſupply the Diminution of Flour,

* *Vide* Poiſon detected, Page 16.

Flour, do not retain the Moiſture of the Water us'd in making the Dough; for when influenc'd by the Heat of the Oven, the Bread attracts their aqueous Parts which they contracted in the Mixture; and thus they remain intermix'd, but unchang'd in the Bread, like ſo many Particles of Sand; for they by no Means unite and incorporate with the farinaceous Parts of the Flour.

Good Bread when bak'd, appears thro' a Glaſs like a Honeycomb, full of Cells, yet the intermediate Parts conſtitute a homogeneous Subſtance of a gelatinous Nature, which readily unites with an aqueous Menſtruum, whilſt the incoherent Particles of Lime, Chalk, *&c.* in Bread, are only diſperſed up and down in an inſoluble State.

Flour mix'd with Whiting, in the Proportion of ſix to one, and bak'd, does not turn out near the Weight of Bread under the ſame Circumſtances, as good Flour without ſuch Admixture would do; and it is a known Maxim amongſt Cooks as well as Bakers, that if two Puddings be ſeparately made with an equal Weight of good and bad Flour, and bak'd together in the ſame Oven for an equal Time, that the Pudding of good Flour will weigh conſiderably heavier than that of bad Flour; this is entirely owing to the inherent Property of good Flour, which retains its Moiſture more advantageouſly; hence the Addition of dry inſoluble Ingredients, with a Deſign to ſave Flour and increaſe Weight, appears as unneceſſary as it is ridiculous, ſince the better the Flour, the leſs is ſufficient; which is not only a Saving, but a Credit to the Baker.

If then it be ſuſpected that Bones, Lime, Chalk and Whiting, are added to increaſe the Whiteneſs of Bread, whoever practiſes ſuch ſtupid Methods will be deceiv'd; for ſuch Subſtances communicate a pale ghaſtly Colour to Bread rather than White, and by contracting the cellular Subſtance, will give it a very unſaleable Appearance.

When Alum is mix'd in a certain Proportion with ſuch Materials, and bak'd in Bread, it greatly prevents that cloſe Union of Parts; for in this Caſe the Acid of the Alum unites with a Portion of ſuch chalky Earths, which it diſſolves, but during the Conflict generates a great deal of Air, which being expanded by the effervеſcent Heat, endeavours to eſcape thro' the glutinous Maſs; by theſe Means, in Conjunction with the Yeaſt the Paſte is puffed up, and thus render'd more ſpungy than when Allum is omitted; but notwithſtanding this Effect, it alters the Colour of the Bread conſiderably for the worſe; for the Acid of the Allum being thus ſpeedily deſtroy'd by the Chalk, *&c.* adds to the Spunginеſs, whilſt the Chalk deſtroys the Colour: Bread thus made, appears of a faint Olive Colour.

Alum bak'd in Bread without ſuch Additions, produces a quite different Effect: The Bakers generally fix the Proportion of four Ounces of Alum to 100*lb.* Weight of Flour; if a much greater Proportion is added, the Colour and Texture of Bread is rather injur'd by it, than improv'd: This ſeems an inconſiderable Quantity, when we calculate the Increaſe of Weight which Flour gains when made into Bread; perhaps there is not ſo much

much as thirty Grains in a Quartern Loaf; I am certain by Experiments, the Quantity muſt be trifling.

Since Alum, then, is the only foreign Article which Bakers uſe with a Deſign to meliorate Bread made with indifferent Flour, let us take a Survey of its conſtituent Parts, that we may be the better enabled to aſcertain its Effects on the human Syſtem. The Alum uſed by Bakers, is that Sort which is made in *England*; conſcious of the Fraud, they generally buy it at ſome Diſtance from their Neighbourhood, moſt frequently at the Oil-Shops, under ſome cant Name of their own Invention, *as Stuff, &c.*

All Chemical Authors allow it to conſiſt of a chalky Earth, united with a vitriolic Acid, hence its auſtere aſtringent Taſte; Urine is poured upon it in its Preparation, to ſeparate its more groſs terreſtrial Parts, by which means it obtains its cryſtalline Tranſparency; this is what the anonymous Bread-Doctor hints at, when he tells us, 'to re-'member it to be an Extract from human Excre-'ment;' but Alum retains a very minute Portion of that, compared with its other component Parts, and if it did, the volatile Salt of Urine is not ſuch an odious diſguſtful Ingredient as he endeavours to repreſent.

Theſe are the obvious conſtituent Parts of Alum; which taken internally in a crude State, and continued for ſome Time, may undoubtedly occaſion various Diſeaſes according to the Doctor's ſpeculative Deſcription; but in order to underſtand what may be advanc'd upon this Subject hereafter,

and to convey an Idea of the Nature of Alum to the meaneſt Capacity, it will be neceſſary to prove theſe to be its conſtituent Parts by Experiment.

Take a clear Solution of Alum in Water, put it into a Glaſs, and add to it, by Degrees, a clear Solution of any alkaline Salt, as Salt of Tartar, Pearl-Aſh, *&c.* as it is drop'd in, white Clouds begin to appear, occaſion'd by the earthy Baſis of the Alum now ſeparating, and a faint urinous Smell will ariſe, which laſts but a very ſhort Time, and the Earth, by ſtanding, will ſubſide to the Bottom of the Glaſs, in exceedingly fine white Powder, called the *Magneſia* of Alum.

In this Proceſs, the vitriolic Acid of the Alum, having greater Affinity with the alkaline Salt than with its own Baſe, attracts the former, and lets go the latter; and, at the ſame Inſtant, a very ſmall Portion of a volatile urinous Salt in the Alum is ſet at Liberty, by the Conflict, which manifeſts itſelf by the Smell; while the Acid of Alum, now united to the fix'd alkaline Salt, conſtitutes a neutral Salt called Tartar of Vitriol; which will more evidently appear if the Point of Saturation be exactly perform'd, and the clear ſupernatant Liquor be decanted, evaporated, and ſet to chryſtallize in the uſual Manner.

The Produce of Wheat in 1756, was not only ſcanty, but very indifferent; it would neither grind nor bake well; the Misfortune was occaſioned by the continued Rain at the Approach of Harveſt, which level'd it to the Ground, and diſpos'd it to ſprout before it could by dry'd and hous'd, and by this means it was greatly diveſted of its Quinteſſence;

teſſence; the Bakers could not make their Bread appear tolerable with the Flour, not with all their *Bones*, *&c.* This induc'd the Bakers to uſe a larger Proportion of Alum, for the Bread would neither ferment kindly in Leaven, nor riſe in the Oven without it; but turn'd out as if it had been mix'd with one Third of Rye-Meal. The Alum improv'd the Colour and Texture, yet the Crumb of the Bread was very harſh, and the Liſt, as the Bakers term it, was not of that peculiar fine brown Colour, (the Characteriſtic of Bread made with good Flour) and the Angles of the upper and lower Cruſts appear'd cloſe, as if they were glued together; which are convincing Proofs of a ſuperabundant Quantity of Alum in any Bread: But on the contrary, the Harveſt was ſo genial the following Year, that I am well inform'd a Baker can make a Quartern-Loaf of the ſame Weight, with half a Pound leſs of the laſt Year's Flour, than with that of the preceding Year; which confirms a former Remark, that good Flour retains its Moiſture ſo advantageouſly, as to render the ſuſpected Practice of Adulteration ridiculous. But notwithſtanding the laſt Year's Flour makes excellent Bread without Alum, yet as the People in general prefer the whiteſt, (which they ignorantly conceive to be the only Mark of its Purity) the Bakers are compell'd to uſe a ſmall Admixture of Alum to pleaſe the Fancy of their Cuſtomers, rather than loſe them. Thus their private Intereſt ſurmounts publick Admonition. In this Caſe, the Buyer is equally culpable, as the Whiteneſs is his Pride as well as the Baker's. However, one

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happy Circumſtance attends good Flour, that a much leſs Portion of Alum is ſufficient to procure the white Colour and Texture ſo much admir'd in Bread; for a greater Quantity diminiſhes them.

Bakers in general acknowledge the Uſe of Alum in Bread, and they alone, probably, will reap the Fruits of their Induſtry; eſpecially if the Invention of Hand-Mills ſucceeds, and the Pariſh Ovens be authoriz'd by Parliament.

It is greatly to be wiſh'd, ſome ſalutary Statute might oblige the Bakers entirely to aboliſh the Uſe of Alum; ſince no material Advantages attend its Uſe, but what may more prudently be diſpenſed with: And altho' I am certain, the trivial Quantity bak'd in Bread, cannot greatly prejudice the Conſtitution, or occaſion thoſe Miſchiefs attributed to crude Alum, yet to ſilence the clamorous Invectives of the People, excited by the ignorant and ſuperficial Arguments, and miſtaken Obſervations of the recited anonymous Author, it would appear much more laudable in the Bakers to aſſociate themſelves with a View to inflict an adequate Puniſhment on all future Delinquents, rather than attempt to injure the Health of their Fellow-Creatures, by the Choice of their daily Bread.

Good Flour yields Bread ſufficiently white, without any artful Admixture; but Brown Bread ſimply made, merits the Preference, as it digeſts eaſier and nouriſhes better. In this Point, I muſt coincide with the aforeſaid Author's Opinion, with this Difference only, that Brown Bread would be rather more eligible, if a third Part of the Bran was rejected; which is the general Practice in ſe-

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veral Counties in *ENGLAND*; for there is no Neceſſity for a Tour to *ITALY* to learn the Method.

It cannot be too ſtrenuouſly recommended to the Bakers, to attempt the making this Sort of Family Bread, ſince it is certainly more wholeſome than white, and would repeal the Suſpicion of admixing Lime, Chalk, Whiting, and burnt Bones in Flour; which indeed could never be ſuggeſted, except by thoſe, who, to favour an idle Hypotheſis, have impoſed upon Truth ſo far as to ſubject themſelves to a public Reproach and Ridicule: For if the inordinate Concupiſcence of Lucre had induced the Confederate Bakers to debaſe the public Bread with ſuch deleterious Additions, this vaſt Metropolis muſt have groaned under ſuch a horrid Depopulation ere now, that the ſurviving Few in vain might ſeek the Remnant of the College of Phyſicians to inveſtigate the morbiferous Principle, or a Chemiſt to analyze the lethiferous Poiſon. Happy Deliverance!

Bran contains few nutritious Parts, if we except the farinaceous Matter adhering to the inner Surface. Indeed, Bran contains the eſſential Oil of the Vegetable; but the Grain is ſupplied with two Membranes or Huſks, the ſecond of which is the principal Seat of the Oil; it is this Oil that imparts that agreeable Smell to brown Bread, ſo ſuperior to white. In grinding the Grain, a great Part of the firſt Skin is divided from the ſecond, and mixes very intimately with the reſt; the firſt is a mere indigeſtible Huſk, a great Part of which will be ſeparated by rejecting a third Part of the Bran,

Bran, whoſe finer Parts being thus intermix'd, greatly facilitate the Digeſtion of Bread in the Stomach, by dividing its more glutinous Pulp. Any dubious Perſon may be convinced of the Reality of theſe two Teguments which invelope the Wheat, by the following Method: Take a Handful of the Grain, pour a little boiling Water upon it, and let it infuſe two or three Minutes, which toughens the firſt Huſk and diſpoſes it to blanch the ſooner, fold it in a Cloth and beat it ſmartly with a Stick and the Huſk will ſeparate preſently.

The Author of *Poiſon Detected*, ſtrongly recommends the Reſearch into the Nature and Properties of human Aliment, and laviſhly beſtows his ſublime Encomiums upon thoſe who purſue ſuch Studies preferably to trivial Subjects, ſuch as Sea-Shells, Butterflies, *&c.* and (what really merits the utmoſt Attention,) continues to inform us, "That whoever can find out a Means to improve "and meliorate our common Food, or aſcertain "the particular Properties of a Plant, merits the "grateful Praiſe of a People; he feeds the Hungry, clothes the Naked, heals the Diſeaſed, and "diffuſes Strength, Gladneſs and Opulence over "a Country. To attain ſuch noble Purpoſes the "Good of the whole muſt ſuperſede every ſelfiſh "View; private Intereſt is a Sacrifice which a "patriot Boſom loves to make to the public "Emolument; Benevolence has no partial Beams; "'tis the Part of a Miſer to lock up a Treaſure, "which, like an Angel, might go forth and bleſs "Mankind; and tho' a Secret in a private Poſ-"ſeſſion, urged to its utmoſt Advantage, might

"prove

" prove a Fountain of inexhauſtible Lucre, a good " Heart diſdains to with-hold it from its utmoſt " Scope of Utility. If then, ſays he, at any " Time the Bread-Corn proves to be unſound or " damaged, if it muſt neceſſarily be uſed for hu- " man Food, rather than mix it with any noxious " Materials, let the Baker who has ſome Share of " Conſcience add an Admixture of fine Barley- " Meal to the unſound Flour, in Proportion as it " is more or leſs damaged ; if a little finely ground " Rice be added, it will not be the worſe for it."

How benevolent and profound the Diſcovery! and of what vaſt Importance! What a Sacrifice of Knowledge and Self-Intereſt is here? Oh! that any Journeyman Baker ſhould have been ſo amazingly ſtupid, as to conceal this myſterious Emolument, when the Diſcloſure might have enrolled his Name in the mythological Liſt of thoſe Heroes of Antiquity *, *Cecrops*, *Triptolemus*, Emperor *Fohi*, *Chintong*, and *Hoangti*.

Is it not ſurpriſing that he who claims the Reward of ſuch honourable Epithets, for inſtructing us how to meliorate unſound Flour with Rice and Barley-Meal, ſhould refuſe to deſcribe the Means to diſcern its poiſonous Admixtures? What Advantage does the Mariner reap from the Information of latent Rocks, without a ſteering Plan to avoid them? And will any Man be ſo ſenſeleſs as place an implicit Confidence in another's meer *Ipſe dixit*, in Matters of ſuch Moment? Let us argue from Experience and beware of haſty Concluſions. If the Bakers and Millers have ever been convicted

* Vide *Poiſon Detected*, page 41ſt.

of adulterating Flour and Bread with Lime, Chalk, Whiting, and calcin'd Bones, they merit no Reprieve; but it is impious and iniquitous to condemn a Delinquent without an impartial Trial. The Accuſer produces no Proofs of their Mal-Practice, except the ſimple Aſſertion, That he has ſeen a Quantity of Lime and Chalk in the Proportion of one to ſix extracted from Bread; which Argument has already been diſcuſs'd; add, that it may poſſibly be a Miſtake; I myſelf made a ſimilar Concluſion, till Experiment convinced me of my Error. It frequently happens that Sacks of Flour are expoſed to wet Weather in the Carriage, by which Means the Flour contiguous to the Inſides of the Sack is moiſten'd and becomes a Kind of Paſte; afterwards, when the Sacks are dry and emptied, this dry Paſte crumbles off amongſt the Flour in little hard Particles, which when made into Dough, will not divide, but remain hard in the Loaf, and when baked greatly reſemble Lime, *&c.* The ſame Accident happens more frequently from the hard Particles of Dough which adhere and dry to the Sides of the Mixing-Trough, eſpecially if the Baker neglects to ſcrape them off daily and does not ſift the Flour (as he always ought;) ſo that there is ſeldom any Bread made but this Appearance will be manifeſt in ſome of the Loaves.

'Tis great Pity the Author did not examine his *Granules* in a chemical Manner; but Chemiſtry and Phyſic are ſeldom united; a Circumſtance infinitely more pitiable, as the latter can never be practiſed to the utmoſt Advantage without a due

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Knowledge of the former, for Reaſons ſufficiently obvious.

The Improbability of adulterating Bread with abſorbent Earths has been ſufficiently evinc'd, but the fix'd Credulity of ſome is not to be reverſed with the bare Aſſertion of others ; and as every Perſon is liable to Deception in Theory, ſo nothing but Experiment can decide the Controverſy ; therefore I ſhall now ſubjoin ſome plain eaſy Experiments, with a View to direct every Individual in the Choice of his Bread, and effectually to diſcover when it is mixed with Lime, Chalk, *&c.*

EXPERIMENT I.

I mixed two Ounces of Whiting with as much Dough as the Bakers generally allow for a three-penny Loaf; it was worked and baked in the uſual Manner ; when baked, it appeared of a grey Colour, rather than white ; the Particles of Whiting were viſible upon the Cruſt, the Cells in the Crumb were ſmall, and the Whole betrayed an unuſual Appearance. It was ſo extremely gritty, notwithſtanding the Whiting had been previouſly ground very fine, that, in my Opinion, the moſt indigent Object would have rejected it ; I pour'd ſome boiling Water to ſome Slices in a Glaſs to ſoften its Texture, and then dropt in ſome Spirit of Vitriol, which immediately produced a violent Ebullition attended with a hiſſing Noiſe peculiar to ſuch chemical Agents ; which was a convincing Proof of ſome abſorbent Earth or alkaline Matter being mixed with the Bread ; for Acids

have no ſuch Effect upon pure Bread, but run thro' it like Water thro' a Spunge. Lime, Chalk, Whiting and burnt Bones are all ſoluble in mineral Acids, and produce the ſame Phænomena if treated after the ſame Manner; vegetable Acids produce the ſame Effect, ſuch as Vinegar, Juice of Lemons, *&c.* but more faintly, on account of their inferior Strength. But for quicker Diſpatch, it is ſufficient to drop a little Spirit of Vitriol * upon the Bread alone, and immediately the hiſſing Noiſe will ariſe, even if there was but the Proportion of one Dram of ſuch Earths in a Quartern Loaf.

I cannot omit to mention a Circumſtance here, which altho' trivial, yet tends to prove the Goodneſs of Bread. Take ſome Crumb of a Loaf newly baked, and without any Addition work it between the Fingers in ſuch a Manner as to render it like a tough Piece of well-work'd Dough, then form it into the Shape of a thin Cup, or the Reſemblance of a Star, with ſix ſmall Cones proceeding from the Centre at equal Diſtances and terminating in obtuſe Points; then let it be thrown with the utmoſt Violence againſt a Wall, and contrary to Expectation it will retain the Form it was made in, even after repeated Strokes: Pure Bread thus work'd acquires an Elaſticity that has decided many a trifling Wager, in baffling the Efforts of the moſt Herculean Strength; but Bread intermixed with heterogeneous Matter cannot be re-

* What is to be underſtood here of Spirit of Vitriol, is made of one Part of the ſtrong Acid of Vitriol, (commonly called Oil of Vitriol) and two Parts of Water, mixed gradually. Acids have the ſame Effect with Flour previouſly mix'd into a thin Batter.

duced

duced to ſuch a Paſte without great Difficulty ; for the intermediate Subſtance of Chalk, Lime, *&c.* prevents the Tenacity and Coheſion of its Parts, conſequently renders it of a more friable Texture ; which under the ſame Circumſtances cannot endure the Conflict, but falls to Pieces at the firſt Percuſſion. And what is more remarkable, ſuch Bread changes its Colour by working it in this Manner, nearly to that of the Subject with which it was adulterated, while pure Bread retains its peculiar natural Whiteneſs

Having already gone thro' the Analyſis of Alum and explained the Motives why Bakers frequently admix it with Bread, I ſhall now proceed to prove, by Experiment, when Bread is ſophiſticated with it, and that by the moſt eaſy Methods, as I regard public Utility infinitely more than the vulgar Imprecations of a ſcurrilous Baker, or the ſublimer * *Mouth-mauls* of an anonymous Doctor.

EXPERIMENT II.

Take the Crumb of Bread, where Alum is ſuſpected to be baked with it, put it into a Glaſs and pour boiling-hot Water upon it, in a ſufficient Quantity to make it like Panada, and while hot, add to it a third Part of good purple-colour'd Syrup of Violets, let them ſtand half an Hour, ſtiring them frequently, and if there be Alum in the Bread, the Syrup will be changed to a Sap-Green ; if not, the Colour will be a little altered, but not green. As it is difficult to expreſs the Colours in-

* Vide *Poiſon Detected*, p. 6th.

duced

duced by this Proceſs, it will be more proper to add a Grain of Alum to the ſame Quantity in another Glaſs, and thus by comparing the Colours, the adulterated Bread will be eaſily diſcovered. Common Salt, Yeaſt and Bread, when pure, are neutral Bodies, and will not alter the Colour of Syrup of Violets; but Alum, either crude or baked, will change it green. When Bread has lain too long in Leaven and contracted an Acidity, it rather converts the Syrup red than green. The Bakers ſometimes correct this Acidity with the Addition of fix'd alkaline Salts diſſolved in the ſame Manner as Gingerbread-Bakers uſe them; thus, if they exceed the Point of Saturation, the predominant Alkali will change the Syrup of Violets green; the Juice of Buckthorn-berries will determine the Difference, if the fix'd alkaline Salt predominates, the Juice is converted into a Sap-green thereby, but if Alum be the principal Addition, the Juice will retain its reddiſh Colour. All alkaline Subſtances change Syrup of Violets green. The Infuſion of Syrup of Violets is of ſuch a tickliſh Nature, that any ſaline Body, not perfectly neutral, deſtroys its natural Colour, which cannot be reſtored again like other Colours dependent on Salts.

The ſmall Portion of Alum compounded with Bread cannot be eaſily diſcovered by any other Means; for crude Alum diſſolved, mixed and baked in Bread, is decompoſed in the Action and no longer retains all its former Properties, yet manifeſts enough to convert Syrup of Violets green; a warm Solution of crude Alum coagulates warm Milk inſtantly, but Alum baked in Bread in pretty

large Proportions, will not, even if it be boiled in it for a conſiderable Time.

Bread made of ſtale Flour, or which has contracted an Acidity in Leaven, curdles warm Milk readily; hence the Source of Childrens Maladies, falſly aſcribed to Bread mixed with Alum; this Opinion ſeems confirmed by the following Experiment.

EXPERIMENT III.

I mixed the Solution of two Drams of Alum with the Quantity of Dough generally weighed for a three-penny Loaf; when baked, it was ſliced and a ſufficient Quantity of hot Water poured upon it, with a View to diſſolve the Salt and Alum; this was filter'd, and into the clear Infuſion I dropped a filter'd Solution of pure Salt of Tartar, which did not produce the leaſt Contraſt or viſible Precipitation obſervable in the Analyſis of Alum; warm Milk was added to this Infuſion and continued in a ſimmering Heat ſome Time, without the leaſt Coagulum, but the Addition of a Grain of crude Alum diſpoſed it to curdle preſently; yet Syrup of Violets ſpeedily contracted a green Colour with this Infuſion. I intended to ſeparate the Salts by diſſolving, filtrating, evaporating and cryſtallizing them in the uſual Method; but the pulpous Parts of the Bread jointly pervading the Filter, fruſtrated the Attempt. It is evident by this Experiment, that Alum in Bread undergoes a conſiderable Change in the Oven; perhaps the Converſion of Syrup of Violets green, may be owing to its alkaline Baſe left in the Bread, when

diveſted of its Acid by means of the previous Fermentation or Fire, eſpecially, if what the Author of POISON DETECTED aſſerts be true, *viz.* that the alkaline Particles of Wood volatilize the natural Acidity of all farinaceous baked Victuals; which, however, is a Point in Chemiſtry, of which I confeſs my Ignorance. But it is highly probable that the Acid of the ſmall Quantity of Alum uſed by Bakers, being thus diſſolved, admixed and baked, may be tranſmuted in the Operation; Chemiſtry affords us numerous Examples equally ſurpriſing, tho' unaccounted for. Aloes and Coloquintida loſe their Bitterneſs by Fermentation, and the highly-acid Dregs of Vinegar yield a ſharp alkaline Salt by Fire. This is certain, that Yeaſt united with Dough, generates an incredible Quantity of elaſtic Air, which being greatly rarefied by the Impulſe of Fire, elevates the glutinous Maſs and forms it into a ſpongy, cellular Subſtance, while the Heat of the Oven, at the ſame Time, evaporates the ſuperfluous Moiſture, and thus conſtitutes what is called *Light Bread.* The preſent Juncture will not permit me to determine the immediate Cauſe of the Decompoſition of Alum in this Action; and indeed, it is ſufficient to demonſtrate with Certainty, that Alum thus treated, loſes thoſe pernicious Properties which are juſtly aſcribed to it when taken internally with our Aliment in its crude State.

I have been inform'd that ſome Bakers elixate their Wood-Aſhes, and with the clear Lixivium attemperate the prevalent Acidity of Dough, eſpecially when mix'd with Alum: The artificial

Scarcity

Scarcity of Flour which ſtill ſubſiſts, compell'd the Bakers to diſpenſe with Flour taken from the Enemy, which, in general, turned out ſo miſerably ſtale, that, without ſome Intermedium, it was impoſſible to make it into ſaleable Bread. If theſe defects be remedied with ſuch a Lixivium, we need no longer remain in Suſpenſe by what means Alum is decompos'd; but this Practice, 'tis ſaid, is known by Few. If Alum be diveſted of its Acid by this Means, it leaves its alkaline Baſe in the Bread, which is a fine Magiſtery, or *Magneſia Alba*, and which unelutriated, becomes aperient rather than aſtringent, like the *Magneſia Alba* of the Shops, a celebrated Medicine for young Children, and ſtrenuouſly recommended by Dr. *Cadogan*; but I cannot conceive any extraordinary good Effects from its Uſe, for the *Magneſia* of Nitre as well as Alum, is nothing but a very ſubtile abſorbent Earth, which diveſted of its Salts by Ablution, acts as ſuch, where there is a redundant Acid in the Stomach, or *Primæ Viæ*, the general Malady of young Children, not only in the City, but remote in the Country, where brown Bread unimpregnated with Alum, conſtitutes the greateſt Portion of their Diet.

The Health of theſe innocent Objects, therefore, ſeems not ſo liable to be impair'd by the Uſe of *London* Bread, ſince Alum thus influenc'd in Baking, does not coagulate Milk, conſequently cannot indurate the Diet, conſtipate the Lacteals, nor aſtringe the Inteſtines; but on the contrary, it is very probable, that being diveſted of its mineral

Acid, and thus taken into the Stomach, it may abſorb the Acidity it meets with there, which is of a vegetable Kind, and then become aperient, thro' the new ſtimulating Power acquir'd by ſuch Union : This Conjecture ſeems greatly countenanced by the uncertain purgative Operation of all *Magneſias*, for a ſmall Doſe will purge ſome Children ſmartly, and a larger Doſe will not diſturb another, under apparent ſimilar Circumſtances ; and theſe alternate Effects are obvious at different Periods in the ſame Conſtitutions, which may be attributed to the various Proportions of Acidity in the *Primæ Viæ* at different Exhibitions. But this is only advanc'd as a plauſible Opinion, for I am not inſenſible how ſurprizingly Bodies lie conceal'd in each other, and what different Effects they produce by ſuch Invelopement ; and whenever it ſhall be demonſtrated, that the earthy Parts of Alum, ſingly conſider'd, affect our Conſtitutions by other Means, I ſhall candidly acknowledge my Error ; *Humanum eſt errare :* And I flatter myſelf that none will be ſo partial as to miſconſtrue my Intentions, or acuſe me as a venal Hireling of the Bakers, by attempting to vindicate them in favour of their Abuſes ; I deſpiſe the alluring Bait of the firſt, and abhor the impious Practice of the laſt. The Scope of my Endeavours is to mediate the Diſpute beween the Bakers and the Publick, in a View to prevent the former from vending Poiſon, inſtead of Bread, and the latter from eating it. To acquit the Innocent and puniſh the Delinquent are equally laudable. He who alarms the Populace

lace with idle Syſtems and Conceits of Poiſon exiſting in Bread, is equally culpable with the baneful Admixer. * If the *Perſian* Decree be juſt, which ordains the Baker to be bak'd in his own Oven for debaſing publick Bread; by the ſame Parity of Reaſon, the falſe Impeacher ſhould be compell'd to ſubſiſt on Bread alone, purpoſely poiſon'd with his pernicious Impurities.

Qui Falſis Terroribus implet,
Vivat Siliquis et Pane ſecundo. HOR.

Juſt as theſe Sheets were preparing for the Preſs, I was recommended to the Peruſal of another Batch on Bread, piping hot from an imaginary Oven. The Title-page ſupports the Name of *James Manning*, M. D. which Letters the Bakers miſimply as Mad Doctor. The Author inculcates the Syſtem of Poiſon detected, from which his entire Plan is evidently borrow'd in every Reſpect, except the Stile, which will ever remain an Original. The Arguments, or rather Conjectures, are generally inconcluſive, and the Methods of diſcovering adulterated Bread erroneous. He enumerates Six Ingredients, which he ſays, Bakers and Millers add to Flour, *viz. Beanmeal, Chalk, Whiting, ſlak'd Lime, Alum*, and *Aſhes of Bone*, and gives Hints of a Seventh of worſe Conſequence than the reſt, and further adds, that the Phyſician will know what

* *Vide* Poiſon detected, *Page* 55.

he means, when he ſays its Quality is Suffocation, and that he has ſeparated this Ingredient from Bread lately, but begs to be excus'd from naming it, leſt he ſhould teach thoſe who with ſufficient Wickedneſs are deficient in Knowledge.

This very Expreſſion betrays the Subterfuge of malicious Ignorance. But who can define the Limits of Envy? Surely the Name of this Material is not ſuffocating? If it can be ſeparated why is it concealed? *Res ipſa loquitur.* What real Phyſician will impeach his Conſcience, by attributing the many ſudden Deaths to a poiſonous metallic Principle in Bread? If white Lead be the virulent Ingredient hinted at, Credulity muſt baniſh our Reaſon, before we deem the Bakers ſuch horrid Perpetrators of a Practice ſo repugnant to the Laws of God, of Man, and Nature; and I challenge the Author to produce any other Ingredient cheap enough to effect the nefandous Purport of communicating Weight and Whiteneſs to Bread, and producing Suffocations internally. The petty Smatterer in Phyſic knows better, and will not dare to aſcribe an immediate ſuffocating Quality to ſuch infected Bread. * Hence, whom ſhall we proclaim SUFFICIENT IN WICKEDNESS, AND DEFICIENT IN KNOWLEDGE?

This Author aſſerts Bean-Flour to be ſo innocent, that Experiments have ſhewn it to afford a Nouriſh-

* The Particles of Lead thus taken into the Stomach, muſt circulate in our Fluids, before they reach the Lungs and induce Suffocation. There are eaſy Methods to diſcover the white Lead in Bread, but the Deſcription ſeems unneceſſary.

Nouriſhment ſuperior even to that of Wheat. The Publick would be greatly benefited by a Set of theſe Experiments. He tells us, as the Miller uſes Chalk, the *London* Baker employs Whiting, which is nothing but Chalk reduc'd to fine Powder, and mix'd up with Size. This is a new Method of making Whiting. He adds, that there is a Filthineſs in Bone-Aſhes which is abominably diſguſtful. On the contrary, this is certainly the cleaneſt Article amongſt the whole; for when Bones are perfectly calcin'd, which require a continu'd intenſe Fire, they become a very pure white Earth, being diveſted of every Impurity which they contain'd before. Thus filthy Expreſſions excite filthy Ideas, which purer Reaſon calcines.

There is a new Scene open'd in his 14th Page, where he informs us, that as the former Ingredients render'd the Body coſtive, ſo Jallap became added to Bread to render it purgative, which gave Riſe to a new Set of Men ſtill more dangerous to the Publick, called *Bread Doctors*.

I have made ſome Enquiry after this Inſtitution, and the Reſult is, that the Bakers never conferr'd this Degree upon any Perſons whatever, except the two recited Authors upon the Subject; the laſt of which, the better to prevent Confuſion, was dubb'd with the additional Particle *Un*. Both were thus honour'd only, in Conſideration of the ſtupendous Diligence ſo laviſhly beſtow'd upon the Bakers, thereby explaining the true Art and Myſtery of adulterating Bread, with ſuch inalimental Materials as were never thought of before.

In

In the ſame Page, we are told, that the Ingredients, *viz.* Chalk, *&c.* are certainly us'd in Bread, for he has ſeparated all of them from it. Few will diſpute the Doctor's Sagacity, but I wou'd freely give an adequate Premium to him, or any other, that was able in my Preſence to extract a ſingle Grain of crude Alum, by any Proceſs, or Reſin of Jallap as he directs, and yet one Dram of Alum and two Drams of Jalap ſhall be previouſly admix'd and bak'd in a Quartern-Loaf for that Purpoſe. It is a great Pity that theſe Authors, upon a Subject of ſuch Conſequence, ſhould not be oblig'd to prove their Aſſertions before thoſe who are veſted with Authority to reward and puniſh according to their Merits.

The Author's Characteriſtics of good and bad Bread are really entertaining.

He directs us in a perfect Manner, as he ſays, to ſeparate all the pernicious Ingredients from Bread; but is greatly at a Loſs to determine the Adulteration of Flour; and is greatly embarraſſed to diſcover with Certainty, when Bean-Meal enters the Compoſition of Bread. Therefore that no Improvement may be wanting to his ſecond Edition; Let him remember, that thoſe who eat ſuch Bread are very apt to f——t ſoon after, and the more ſuch Admixture, the more violent the Exploſion.

I ſhall conclude this Subject by obſerving, that the Taſk is infinitely more facile, to diſcover the pretended Impurities in Bread, than to trace the real Motives which induc'd theſe two famous Doctors

tors to impoſe their diſſentious Arguments upon the Publick: If the Cauſe was want of Fame, their Deſign is accompliſh'd; but if they are as ignorant in Phyſic as Chemiſtry, the Want is BREAD.

Diſſentious Rogues,
That rubbing the poor Itch of your Opinions
Make yourſelves Scabs. SHAKESPEAR.

THE

THE

APPENDIX.

——— ——— *Alterius ſic*
Altera poſcit Opem Res, et conjurat Amice. HOR.

THE Author of Poiſon detected, informs us, that the Decreaſe of the People is owing to the Abuſes committed in making of Bread; this Aſſertion is not well-grounded, for ſuch Decreaſe has not yet been ſufficiently prov'd, neither is it generally believ'd; but allowing the Juſtneſs of the Sentiment, I hope it will be acknowledg'd hereafter, from the Arguments and Experiments already advanc'd, that Baker's Bread can by no Means be admitted as the primary efficient Cauſe. Let us take a general Survey of our common Diet, and the Manner of preparing it, together with ſuch Diluents which are indiſpenſably neceſſary to promote Digeſtion, and animate the human Frame, and we ſhall ſoon be convinc'd that Bread, as it is now made, is the very Antidote of that Poiſon which it is ſuſpected to poſſeſs: When I reflect on the prodigious Quantities of real poiſonous Matter

Matter, ſwallow'd down daily in Wine, Punch, Porter, Cyder, *&c.* I am ſurpriz'd that the ill Conſequences have eſcap'd the Conception of the Populace, but it is aſtoniſhing, to think that ſuch Obſervations have not produc'd the moſt diligent Reſearch into the efficient Cauſe, by thoſe Guardians of publick Health, whoſe principal Merit depends upon ſuch intricate Knowledge. Certainly Public Calamities will never enhance private Emoluments. The Hoſpitals have been crowded for Years with Patients labouring under Infirmities ariſing from one common Source, *viz.* drinking too freely of unwholeſome Beer or Porter, yet the lurking Poiſon has eſcap'd Diſcovery: If we attribute this Neglect to Ignorance, we inſult their Knowledge; and dare we aſcribe it to Indolence? Shameful! This is the City Fountain.

Which holds a Poiſon of ſuch deadly Force. LEE.

It is a ſevere Reproach upon our Intellects, and public OEconomy, when we reflect, that in this vaſt Metropolis, we ſcarce eat or drink any Thing pure and void of fraudulent Mixture, pernicious to our Health. Hence we account for the rare Inſtances of Longevity, and the preſent pigmy Race.

Notwithſtanding theſe real Abuſes require immediate Redreſs from thoſe in Power, I ſhall not amuſe the Publick with Plans for that Purpoſe, but think it ſufficient to prove what I aſſert, with familiar Experiments, that every Individual may reap the ſame Advantages as myſelf. I have long conceal'd my Sentiments upon theſe Subjects, leſt

 the

the ſeeming Indignity ſhould produce ſome Rancour in the Circle of my Acquaintance, which I flatter myſelf will be ſuperſeded by publick Utility, eſpecially as no Particulars are pointed at; yet I bluſh to acknowledge, that the two Authors upon Bread extorted this Appendix from me with a View to expoſe the Chimerical Notions and frivolous Pretexts of Poiſon exiſting in Bread, and to prove more eſſentially the Baſis of various Diſeaſes inconſiſtently aſcrib'd thereto.

Beer, commonly call'd Porter, is almoſt become the univerſal Cordial of the Populace, eſpecially ſince the neceſſary Period of prohibiting the Corn-Diſtillery; the Suppreſſion preſently advanc'd the Price of that common Poiſon Gin, to near three times its former Price, and the Conſumption of Beer has kept Pace with ſuch Advance. A few Years ago, a *Wincheſter* Quart of old ſound Porter, would yield near ſix Ounces of good proof Spirits by a careful Diſtillation; but the Beer brew'd lately, will not yield four Ounces of the ſame Proof; whether this be owing to the Avarice of the Brewer, or the Quality or Scarcity of the Malt, is not very pertinent to the Subject; but the Reduction of its Strength ought to be balanc'd by its Genuineneſs. Beer diveſted of its Quinteſſence by any Means, ſpeedily becomes too forward and ſickly, (as it is phras'd) and ſuch Beer requires more Circumſpection and Management than good ſound Beer; the Loſs of its ſpirituous Body diſpoſes it to turn flat, ſo that, when thrown down (as it is call'd) or clarified with Iſinglaſs, and afterwards drawn into proper Drinking-Veſſels, it will not

not retain its flowery Head or Froth, the Pride both of the Victualler and Drinker. The Brewer's Coopers employ'd to rectify the usual Disorders of Beer, have invented various Methods to remedy this Defect, and at length have hit upon one which answers the Business excellently, but at the same Time proves of the most pernicious Consequence to the Constitution; Green Vitriol (commonly called Copperas) or Salt of Iron is the general *Panacea* for such Beer; a Quantity of this nauseous Styptic, from one to six Ounces, is previously dissolv'd in Milk or Beer, then mix'd up with a Solution of Isinglass, and thus added to one Butt of Beer; when by this Means it is render'd fine, and drawn into Drinking-Vessels, the Head or Froth will rise to three or four Inches above the Vessel, and will continue so for a considerable Time; the Populace commit the same Error, and are equally culpable in the Choice of their Beer, as Bread, for they will eat no Bread but what is white, nor drink any Beer but what is drawn with a Head like a Collyflower, as they term it; and there are few Victuallers but what use more or less of this prejudicial Ingredient; for I have seen large Quantities of Salt of Steel bought by various Coopers at different Times for this very Purpose. Salt of Steel differs very little from purified green Vitriol, altho' it is a Chemical Preparation of the Shops; as Alum consists of a Chalky Earth united to the Acid of Vitriol, so Copperas, or green Vitriol, consists of a martial Earth united with the same Acid, and thus only differ in their Basis as to Composition, but the last is infinitely more nauseous

and unwholeſome, eſpecially when drank in Beer, for in this Caſe it is not decompos'd, like Alum in Bread, before it is taken internally, but every Particle of Beer is united to a Particle of Vitriol, and is thus taken into the Stomach diſſolv'd in its crude State.

It is allow'd that Salt of Steel when prudently given, proves an excellent Medicine in ſome Caſes, but when it is daily drank in Beer, and continued a few Days, it is not difficult to conceive by what Means it may produce very acute and dangerous Diſeaſes : It does not affect all Conſtitutions alike, for where there is a predominant Acid in the Stomach, it is increas'd by it, and thus ſometimes in a ſurprizing Manner induces a moſt intolerable Pain in the Stomach, with a Heartburn ; ſometimes a ſevere Griping enſues, which at length is ſucceeded by a moſt obſtinate Diarrhœa. I appeal to the common People, if they are not frequently afflicted with theſe Complaints after drinking ſome Sorts of Beer. The great *Boerhaave* obſerves, that this Salt of Iron meeting with alkaleſcent and putrid Matters in the Body, and thus having its acid Solvent drank up thereby, is turned into an aſtringent, ponderous, ſluggiſh, metallic Calx, that occaſions inveterate Obſtructions ; and that at other Times it changes the Excrements black, and forms them to a Matter like Clay.

There is ſtill a worſe Miſchief attends this Abuſe, when Salt of Iron is thus conſum'd in Beer, it remarkably increaſes the *Momentum* of the Blood, eſpecially

eſpecially if Exerciſe be us'd after it, the increas'd Velocity of the Blood heats the Body, this induces Thirſt, which the Toper in vain attempts to relieve, by drinking more Beer, and thus is inadvertently hurry'd into a Debauch, attended with a moſt intolerable Head-Ach. The next Day a Sickneſs at the Stomach and an univerſal Languor prevails ſo much, that the Labourer becomes unfit for his accuſtom'd Exerciſe; he innocently accuſes himſelf of the imprudent Exceſs, but remains perfectly ignorant of the immediate morbiferous Principle.

The ill Effects attending this infamous Adulteration of Beer, need no Illuſtration, and if any one diſputes the Practice, let him interrogate the Coopers and Victuallers, who being generally ignorant of the ill Conſequences, ſeldom deny the Fact.

For we have prov'd it by their Practice,
No Argument like Matter of Fact is. HUD.

But if their Conſciences will admit a Denial, enquire of the Chemiſts, What is the general Uſe of Salt of Steel? Who buy it? and to what Purpoſe? If their Reply be not ſufficiently evincing, Experiment will decide the Controverſy.

EXPE-

EXPERIMENT.

To prove when Beer is adulterated with Salt of Steel, or green Vitriol.

Take one Ounce of the beſt blue-colour'd Galls, ſuch as the Dyers uſe, powder them groſly, and boil them a Quarter of an Hour in half a Pint of Water, ſtrain the Decoction and keep it in a Phial for Uſe.

Where Beer is ſuſpected to contain green Copperas or Salt of Steel, take two Wine-Glaſſes, fill them with ſuch Beer, place them in a good Light, and add a few Drops of the Decoction of Galls to one Glaſs, ſtir it well and compare it to the Colour of the Beer in the other Glaſs, and if it be changed the leaſt Degree blacker, it may with Certainty be concluded, that ſuch Beer is impregnated with ſome chalybeate Particles, which will appear more evidently, if the two Glaſſes be examined after they have remained undiſturb'd twenty-four Hours; in which Caſe, a blackiſh Curd generally ſubſides to the Bottom of the Glaſs admixed with the Decoction. But for a more ſufficient Proof, as the Quantity of Salt is ſometimes more minute; take a Gallon of Beer and boil it gently till it be conſumed to a Pint, or leſs, to which add ſome Decoction of Galls, as before, and the Effect will be more obvious: If no additional Blackneſs ſupervenes, it is evident ſuch Beer is unadulterated with Salt of Steel. At other Times Beer is ſo profuſely contaminated with it, that a ſtyptic inky Taſte is very perceptible after drinking it. There are va-

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rious other Methods to detect the Fraud, but these are moſt eaſily performed. Theſe Salts are not the only Impurities with which Beer is debaſed: The ſtrong Acid of Vitriol is preferred for different Purpoſes. Beer ſometimes is ſo peculiarly ſtubborn, (as it is phraſed) as to reſiſt Purification with common Finings; this Defect is remedied by a previous Addition of the Acid of Vitriol, four Ounces whereof is the general Proportion to a Butt. And another ſecret Advantage reſults from this Practice; for a Butt of mild Beer is thus rendered ſufficiently acid for the Victualler to gratify the ſtale Palate of his Cuſtomer, or to reſemble what they call *Intire Butt Beer*. In other Beer the natural prevalent Acidity is deſtroyed by the Addition of fix'd alkaline Salts, Soap-Lees, and calcarious Earths; the firſt produce an immediate Effervescence, by the Coopers called Fomentation, and when the Conflict is over, the groſs Particles are more eaſily precipitated with the Finings. The firſt, in one Senſe, is a venial Crime, for the Union of pure alkaline Salts with the natural vegetable Acid of Beer, produces a *Sal Diureticus*, which is not generally pernicious, as it deterges the urinary Paſſages and runs off quickly; however, like Alum in Bread, it has no buſineſs there: The Properties of the reſt will be conſidered hereafter.

Sometimes, tho' ſeldom, Lime and Oil of Vitriol are alternately added to Beer, with a View to rectify what is term'd *Cloudy Beer*; this Mixture produces a *ſelenite* Salt, which hitherto has been adjudged indiſſoluble. If this Salt did not gravitate

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to the Bottom of the Caſk, in its Needle-like Shoots, I ſhould dread the Conſequences.

Hence, likewiſe, we can eſtimate the Miſchiefs ariſing from theſe artful Sophiſtications. Miſerable is the Perſon afflicted with a prevalent Acidity in the Stomach, who drinks beer contaminated with the Acid of Vitriol; but he who indulges his bilious Conſtitution with alkaline Diluents, adds Oil to Flame. Health is an ineſtimable Bleſſing; yet how ignorantly and willfully is it ſported with? To enumerate the Variety of Diſeaſes which may ariſe from this infected Fountain, would exceed the Limits of my Intention; they are obvious enough to thoſe whoſe Judgment directs their Cure. *Sat Verbum Sapienti.*

If any public Abuſe merits Redreſs, ſurely this will be firſt in Rank, ſince the unmoleſted Villainy muſt inevitably brood ten Times more Deſtruction than Bread made with Alum.

Milk, with a Proportion of Alum, is ſometimes added, with a View to fine cloudy Beer; at the ſame Time, a neceſſary Quantity of colouring Matter is admixed to communicate a proper Colour to Beer; this colouring Matter is variouſly prepared; the Juice of Elder-berries is the Favourite of ſome; others prefer the Decoction of Logwood, or brown Sugar burnt and diſſolved, in the ſame Manner as haſty Cooks colour their Gravy; whilſt others for Cheapneſs ſubſtitute what is called Waſh by the Diſtillers, which is the Reſiduum of Melaſſes after it has been fermented and diſtilled. The ſame Method is practiſed by ſome Small-beer Brewers, to procure a commendable Colour to their pale Beer,

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after the colouring Tincture of Malt has been previouſly extracted by the Ale or firſt Worts; all which Cuſtoms, however innoxious, ought not to be countenanc'd, but excite the Indignation of every Conſumer.

There are certain Methods to detect theſe artificial Combinations; but as the Deſcription of them here might prove a tedious Incumbrance, I ſhall prefer what is evidently more material.

Experiment to prove when Oil of Vitriol is admixed with Beer.

Take one Gallon of ſuſpected Beer, and boil it down to a Pint, as before directed; and add to it gradually, a clear Solution of any fix'd alkaline Salt, till the Acidity is perfectly ſaturated; which may be known by its Effects upon Syrup of Violets; for if the Acid predominates it will change the Syrup rediſh; if the Alkali, green: Stir the Beer thus ſaturated, and dilute it with a Pint of Water; filter and evaporate to a ſmall Quantity; place it in a Cellar in a flat-bottom'd China Veſſel, and in a few Hours there will be perceived ſmall Particles of a neutral Salt adhering to the Sides and Bottom of the Veſſel, called *Tartar of Vitriol*, which will not appear if the Beer be free from the Acid of Vitriol; for the natural Acidity of old Beer is of the acetous Kind, which thus would conſtitute a ſaline, ſoapy Magma reſembling the diuretic Salt of the Shops, except in Colour, and which will not cryſtallize like the former.

I cannot conclude these Observations upon adulterated Beer, without giving one Instance of its ill Effects: Two Persons now living, being greatly fatigued last Summer with walking, agreed to refresh themselves with a Draught of Porter by the Way; one drank his first Draught moderately, but in less than a Quarter of an Hour complained of a Giddiness and inward Pain, which increased so quick that he fell down as if Epileptic; his immediate Death was expected by the Apothecary, whose Medicines, however, afforded some Relief; mean while, the other began to complain of the same Symptoms, which were not quite so violent. He reached Home with Difficulty, and was obliged to employ his Apothecary, by whose Means he regained his Health in a few Days. They attributed their Illness entirely to the Beer, as they were both cool, and perfectly sober, having drank nothing else during their Walk, and are ready to attest the Truth of this Incident to any dubious Person.

Observations on Cider.

CIDER is a Liquor drank very plentifully during the warm Season, which is a sufficient Inducement to its Adulteration. The Want of a larger Proportion of the natural inflammable Spirit in Cider disposes it to turn of a crabbed Sour. Cider judiciously made is an excellent Liquor, and greatly exceeds in all Respects the low Wines made in *France* to answer the Intention of Beer. Cider affords

affords a noble Inſtance to what Advantage Wines might be made in *England*, if duly encouraged; and none are more ſenſible of its Value than the *Engliſh* Wine-Merchants. Cider well made will keep very well in proper Cellars for Years; but what is generally drank by the Populace is ſuch abominable Stuff that it puzzles the greateſt Artiſt to preſerve it tolerably one Seaſon. The fine Powder of Alabaſter and Marble-Duſt, as it is called, which is what the Stone-Maſons rub off in poliſhing Marble, are frequently added to Cider; the Acid of Cider diſſolves theſe Subſtances, and in Proportion to ſuch Solution, the Remainder becomes milder thro' the Loſs of the Acid, for the Acid and Earth act upon each other reciprocally. The abſorbent Earths are indiſcriminately uſed for the ſame Intention. The Practice became ſo general a few Years ago, that a certain Cooper was not aſhamed to advertiſe a Compoſition of ſuch Ingredients, enough for One Shilling, to cure twenty Gallons of ſour Cider, Wine, Beer, *&c.* but altho' the Liquors in this Caſe are rendered milder, by diveſting them of their ſuperabundant Acid, yet after ſuch Earths are diſſolved, the Liquors are preſently diſpoſed to generate freſh Acidity; or if the alkaline Quality of the Earth predominates, the Liquors turn vapid or flat, and never regain the eſſential Spirit which they loſt; and whoever drinks ſuch Liquors, let them remember that at the ſame Time, they are drinking a Solution of Stones and abſorbent Earths, as Chalk, Oyſter-ſhells, Crabs-eyes, calcin'd Bones, *&c.* which continue diſſolved no longer in the

Body than while their Solvent retains its Properties as ſuch; for when ſuch Liquors meet with any Thing putrid or alkaleſcent in the Body, which generally happens in bilious Habits, the acid Solvent will probably be deſtroy'd thereby, conſequently the Earth will be let go, and thus lay the permanent Foundation for chronic Diſeaſes, particularly the Stone and Gravel, if not the Gout. Let us illuſtrate the Argument experimentally by means of the Solution of Lime in the concentrated Acid of Sea-Salt; this Solution has been long *impoſed* upon the World, under the abſtruſe Title of *Liquid Shell*, and artfully aſcribed to the Invention of one *Schwanberg*, a *Chemiſt*, and republiſhed for the ſole Benefit of his only Eulogiſt, *W——r B——r*, Typographer.

The *Liquid Shell* here meant, may be prepared by calcining powdered Oyſter-ſhells in a reverberatory Furnace for a few Hours, by which Means they acquire the Properties of pure Lime; the Powder muſt then be flux'd with double its Weight of Sal Armoniac, by which Means the concentrated Spirit of Sea-Salt in the Sal Armoniac quits the volatile Alkali with which it was united, and diſſolves the calcin'd Shells; the melted Maſs is now ſuffered to run *per deliquium*, or more commonly is diſſolved by the Affuſion of hot Water, then filtred and evaporated to a due Strength, it becomes the famous Menſtruum ſo ſtupidly recommended as a Solvent for the Stone and Gravel. A Medicine of ſimilar Properties has been prepared Time immemorial, tho' perhaps unobſerv'd, from the Reſiduum of Spirit of Sal Armoniac with Quicklime,

treated

treated as above. The Lime Phoſphorus yields the ſame.

The Properties of theſe Solutions ſufficiently illuſtrate the ill Conſequences which may ariſe from drinking Wine, Cider, Beer, *&c.* impregnated with ſuch teſtaceous Earths; for if a Solution of any alkaline Salt be added to theſe Solutions, the Acid of Salt inſtantly lets go the Earth which before it held in a tranſparent fluid State, and unites with the Alkali, which thus generates Sea-Salt. This is a convincing Proof, that the Solution of theſe chalky Earths in Acids may be eaſily decompoſed in the human Body, the dreadful Conſequences of which may be eaſily comprehended. If the Powder now precipitated be waſhed from the Salts and dried, it greatly reſembles, as to Appearance, that tophaceous Earth extracted from the Joints of gouty Patients. Theſe Subſtances diſſolved in vegetable Acids produce the ſame Effects, on which Account a great deal more might be advanced in a medical View, was it not deviating from the Subject.

To prove that the *Liquid Shell* is nothing elſe but fine Lime diſſolved in the concentrated Acid of Salt; take an Ounce of the Solution, and add to it ſome ſtrong Acid of Vitriol, which will immediately wreſt the Lime from the Spirit of Salt, and produce a Precipitation, but not perfectly, becauſe the Acid of Vitriol will not diſſolve ſo great a Portion of ſuch Bodies as Spirit of Salt, but the Spirit of Salt is immediately render'd volatile by this Addition, and flies off in Fumes.

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The Dealers obſerve, that Cider, when treated in the Manner already mentioned, is diveſted of its peculiar Roughneſs and taſtes flat; Alum is added to reſtore the former, and Treacle, which communicates a new Fermentation and a commendable Sweetneſs with a brown Face, is the general Remedy for the latter; this Addition is commonly made a few Days before it is ſold to the Retaler, leſt it contract a new Acidity after the Fermentation is finiſhed; for Acids united with Abſorbents never return to Acids again. If this Cider be ſpeedily bottled, it preſently becomes briſk, ſparkling, and attended with that mantling, flatulent Appearance, which wins the Approbation of the Conſumer. Leaden Veſſels are ſometimes ignorantly employed in the making of Cider and remedying its Defects; the Acid thus diſſolving a Portion of Lead, is converted into a certain, deſtructive, ſlow Poiſon. A few Drops of the Tincture of Orpiment drop'd into ſuch Cider changes it black, which is an infallible Method to diſcover it.

Obſervations on Vinegar.

THE beſt Vinegar made at the large Works about *London* is exceſſively bad, when compared with what is made from good Wine; which laſt ought to be carefully diſtinguiſhed from ſour Wine, Cider, *&c.* which notwithſtanding its auſtere Taſte, muſt not be accounted perfect Vinegar. When *Engliſh* Vinegar, or rather ſour Ale, thro' any injudicious Treatment, does not turn out ſufficiently

ficiently acid, Oil of Vitriol frequently becomes the compenſative Subſtitute. I have experienced this to my great Detriment in ſome chemical Operations. The pernicious Effects reſulting from the vitriolic Acid repeatedly conſumed at our Meals, has been already demonſtrated; but as Vinegar is of ſuch extenſive Uſe in Sauces, Pickles, Salads, *&c.* the Public are innocently enſnared into a large Conſumption of the former Acid, under the Maſk of the latter; hence proceed thoſe violent Pains in the Stomach, Gripes and Colics after eating Salads with Vinegar, notwithſtanding the Interpoſition of Oil, *&c.* which Complaints ſeldom ariſe from the liberal Uſe of pure Vinegar.

Good Vinegar has ever been accounted ſalubrious when diſcretionally uſed, eſpecially in bilious Conſtitutions; it is an experienced Preſervative in epidemic Diſeaſes. The learned *Boerhaave* judiciouſly extols its Efficacy in putrid Fevers, Small-Pox, and the Bites of venomous Animals, and expreſly affirms that in Mortifications and Gangrenes it has no equal. He adds, that good Vinegar is ſo oppoſite to Drunkenneſs, that a Perſon almoſt dead drunk by the Abuſe of ſpirituous Liquors, may be brought to himſelf by drinking of good Vinegar; but theſe excellent ſalutary Qualities are not to be expected from the Uſe of the common ſophiſticated Traſh made in *England*, and impoſed upon the Populace under the plauſible Pretext of White-Wine Vinegar.

How ineſtimable then is that Science which not only directs us in the Choice of what Aliments we

eat

eat or drink, but reveals the iniquitous Artifice of thoſe intruſted to prepare them.

——*As if they labour'd*
To bring Manſlaughter into Form. Shak.

Experiment to prove when Vinegar is adulterated with the Acid of Vitriol.

Take two Quarts of Vinegar, and boil it in what is called a Stone Earthen Veſſel, till about Four Ounces be left, then diſſolve half an Onnce of Salt of Tartar in four Ounces of hot Water, which add to the Vinegar, filter it, put it into a Flat-bottom'd Earthen Diſh or Glaſs, place it in dry Sand, previouſly put into a ſmall Iron Pot, which put over a gentle Fire, that it may evaporate to about one Ounce; then take the Veſſel out of the Sand, and put it in a cool Place for an Hour, and if there was any Oil of Vitriol in the Vinegar, it will be united with the Salt of Tartar, and thus conſtitute *Tartar of Vitriol*, which will be found ſticking in ſmall Cryſtals to the Bottom of the Veſſel, and which may be eaſily diſtinguiſh'd by their Form and Taſte, for pure Vinegar and Alkaline Salt form a *Sal Diureticus*, which appears quite in a different Manner, as before obſerv'd.

The Quantity of theſe Cryſtals determines the Proportion of the Vitriolic Acid.

Several Methods have been invented to rectify the Impurities of *Engliſh* Vinegar, and to concentrate its Acid; the common Method is Diſtillation,

tion, which, if judiciouſly performed in Glaſs Veſſels, anſwers the Purpoſe very well; but as both Chemiſts and Diſtillers for Diſpatch, generally perform it in Copper Stills, with Pewter Refrigeratories, it is thus render'd worſe for internal Uſe than it was before; for by this Treatment it diſſolves a large Portion of Metal, thro' which it runs, and Copper itſelf in ſome Proceſſes, is elevated over the Helm by Means of Vinegar; theſe Metals taken internally, prove a dangerous, and almoſt incurable Poiſon to the Body: Diſtill'd Vinegar is ſeldom without an Empyreuma, which is owing to the Inattention of the Diſtiller; Vinegar unattended with this Empyreuma, after Diſtillation in common Stills, is generally recommended as the pureſt Vinegar; becauſe the Addition of fix'd Alkalies to it, cauſes no Precipitation, which would certainly be the Conſequence, if it contain'd any metalline Particles; but I am convinc'd to the contrary by the following elegant Experiment: Let common Vinegar be diſtilled in a Glaſs Cucurbit, with a Plate of Lead ſuſpended in its Head, the Vinegar thus diſtill'd, appears perfectly pellucid and pure, and does not manifeſt the leaſt Appearance of Lead by the Addition of Alkalies; but if a little Tincture of Orpiment be drop'd into ſuch Vinegar, it immediately changes black, which Colour is not produc'd with pure diſtill'd Vinegar. This is a ſurprizing Experiment. Who would imagine that any of the conſtituent Parts of Lead could be ſo minutely divided, and wonderfully conceal'd in this Vinegar, as to elude the Criterion of Alkalies? Perhaps this Tincture of

Orpiment is a Key to ſome other Secrets of ſtill greater Importance.

Since *Engliſh* Vinegar ſeldom eſcapes Adulteration, the ill Conſequences of which are daily experienced, an eaſy Proceſs for preparing good Vinegar for Family Uſes, may not be improperly deſcrib'd here; in which Caſe, let the following be obſerv'd as a general Rule, *viz.* That the very beſt fermented Liquors make the beſt Vinegars: They miſtake the Matter greatly, who attempt to prepare good Vinegar from ſtale acidulated Subjects, diveſted in a great Meaſure of their inflammable Spirit; for all their natural Parts are abſolutely neceſſary to preſerve the Eſſence of Vinegar. The Chemical Writers abound with Proceſſes for making of Vinegar, particularly *Glauber*, *Stahl*, and *Boerhaave*: The following is the Method I have preferr'd.

An eaſy Method of making excellent Vinegar for Family Uſe.

Take a Five-Gallon Caſk, with a pretty large Bung-Hole at one End, ſeaſon it two or three Days with common Vinegar, then pour it out, and put into it four Pounds of Raiſin-Stalks, and Four Ounces of Ginger bruis'd, then take Four Gallons of good ſound Wine or Ale, let this be juſt brought to boil with a very quick Fire, and immediately add it to the Ingredients; place the Caſk either in a hot Sun, or near a Fire, ſlightly cork'd, ſhaking it every Day, and in a little Time it will be converted into excellent Vinegar.

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The Ginger and Raiſin-Stalks are only added to promote the acetous Fermentation. The Furnace called an Athanor by the Chemiſts, is very commodious for the Purpoſe, for by its Means a due Degree of Heat can be given and continued at Pleaſure, with very little Trouble.

There are ſeveral Methods in Uſe for meliorating the Acid of Vinegar, the freezing of weak Vinegar in an airy Place, defended from the Snow, is very ſimple and practicable, for thus by rejecting the Ice, the remainder is render'd ſufficiently Acid, but as this Practice is attended with very great Waſte, the Chemiſts have invented a Proceſs whereby Vinegar can be ſtrengthened at Pleaſure with its own natural concentrated Acid, by which Means the Addition of a mineral Acid, becomes as unneceſſary as it is unwholeſome.

OBSERVATIONS *on* PICKLES.

Pickles are the next occurrent Articles which merit a Remark, eſpecially where Vinegar is the preſerving Principle ; ſuch Pickles whoſe Sale depends upon their green Colour, as Cucumbers, *French* Beans, Samphire, *&c.* are liable to the moſt infamous Abuſe : The prodigious Conſumption of Pickles in the Navy, as well as in private Families, has induc'd the Wholſale-Dealers to give them an enticing Green Colour by various fraudulent Arts ; Verdigreaſe and Blue Vitriol are previouſly diſſolv'd by ſome, for this Purpoſe, whilſt Cooks and Houſekeepers, to avoid the Imputation of this odious Practice, have taken great Pains to procure

Veſſels of Bell-Metal, Braſs, and Copper, to boil their Vinegar in, and others with more ſcrupulous Diligence, have only thrown a handful of Halfpence into the boiling Liquor for the ſame Purpoſe. All theſe villainous Artifices anſwer the ſame End, and are all alike pernicious, except that with Blue-Stone, ſo called, which is certainly the moſt noxious, as being Copper diſſolv'd in the Acid of Vitriol; Verdigreaſe is nothing but Copper corroded by a vegetable Acid, and when Vinegar is boil'd in Copper Veſſels, it diſſolves enough of the Metal to merit no other Title.

Alum is diſſolv'd in the Vinegar to procure a requiſite Criſpneſs in the Pickles, this infamous Practice is call'd *Setting*, by the Oilmen; ſome of whom, with a little Remorſe, ſubſtitute tinn'd Veſſels in Preference to the others; but tinn'd Veſſels are not unexceptionable here, for Vinegar readily diſſolves ſuch Tinning, even if it be of pure Tin, notwithſtanding the contrary Aſſertion of the Brazier, who being honour'd with a publick *Præmium*, for lining Culinary Veſſels with pure Tin, imprudently advertis'd them to withſtand all the Acids us'd in Cookery; when the ſimple Experiment with Apple-Sauce, would have convinc'd him of his Error; for this Metal diſſolves the ſooneſt in the weaker Acids, which thus renders them very inſalubrious.

The additional Green Colour of Pickles is diſcoverable by ſeveral Means; in general they appear of a deeper Green Colour than natural; eſpecially Cucumbers, which frequently are gather'd with one Side whiter than the other, but when thus artfully

artfully pickled, they appear all alike green; and in ſome, the æruginous Taſte is plainly perceptible.

Experiment to prove when Green Pickles are colour'd with Blue-Stone, Verdigreaſe, or Utenſils of Braſs and Copper.

Scrape off the Outſide of the Pickle, and ſpread it about an Inch ſquare upon the Blade of a clean ſcoured Caſe-Knife, hold the Blade over the Fire, or the Flame of a Candle, and evaporate the Moiſture very gently, then rub it off, and that Part of the Blade will appear of a Copper-Colour, if the Pickles have been treated as above. The Doctrine of Chemical Precipitation explains the Reaſon. A Plate of any poliſh'd Iron, ſteep'd a ſmall Time in the Vinegar, will manifeſt the ſame Appearance, and ſome Pickles change of a bluiſh Colour, by the Addition of Spirit of *Sal Armoniac*, ſo as to predominate over the Acid of Vinegar.

Theſe Abuſes are very unneceſſary, for the natural Green Colour of Pickles may eaſily be preſerv'd without any fraudulent Abuſe.

Thoſe who prefer making their own Pickles, ſhould be provided with large Earthen Pans unglaz'd, which will endure the Fire, they are eaſily procurable at the *Vaux-Hall* Pottery, and the Pickles ſhould by no Means be preſerv'd in common glaz'd Earthen-Veſſels, as the Vinegar diſſolves the Lead of the Glazing, and Sugar of Lead has been extracted from ſuch Solution. But no ſuch Danger attends the Uſe of what is call'd Stone-Ware; and the Method of ſtrengthening Vinegar with

with its native Acid, renders the boiling of it in Pickling, at all Times unneceſſary.

Hence, the utmoſt Caution ſhould be obſerv'd, not only in the Choice of Pickles, but in preparing them for Family Uſe, leſt they ſhould, inſtead of a wholeſome agreeable Sauce, conſume a Portion of crude Alum, Oil of Vitriol, Lead and Verdigreaſe.

I ſhall now conclude theſe Remarks, without entering into a Detail of adulterated Wines, which might reaſonably be expected; a compleat Examination of their numerous Sophiſtications, and inſalubrious Admixtures, both at Home and Abroad, together with the various Means to expoſe them, would fill a Volume; and I flatter myſelf that the preceding Obſervations will be acknowledg'd a convincing Proof of the inefficacy of Alum conſider'd as a Poiſon in Bread, when compar'd with the deſtructive Compounds already deſcrib'd, which however conſtitute but a ſmall Part of what might be advanc'd upon ſimilar Subjects, at preſent omitted on Account of the haſty and neceſſary Publication of this Treatiſe. Were we to condeſcend to minute Particulars, the Purſuit of unwholeſome Subſtitutes in the Management of our Viands, and the certain Rules to detect them, eſpecially in thoſe of the Opulent, would furniſh us with an Idea of endleſs Labour; the moſt ordinary Kitchen abounds with them: What Parent in his Senſes, who underſtood the poiſonous Effects of Lead, would indulge his endearing Offspring with the enticing, luſcious, Blue-colour'd Paſte of a Fruit-Pye, bak'd in a Pewter-

Diſh,

Diſh, and yet regardleſs of Remonſtrance, how voraciouſly do the CHILDREN of the LARGEST GROWTH devour it.

Sweetmeats and Ginger-Bread boaſt their pernicious incentive Allurements. Punch is frequently acidulated with the Acid of Vitriol, diſguis'd with the Fragrancy of Eſſence of Lemons.

Old Hock, Moſelle, and Rheniſh Wines, have been impregnated with the Sugar of Lead, with a View to meliorate their auſtere Taſte; but let it be remember'd once for all, that in whatever State Lead be taken internally, it certainly will retard the Circulation of the Blood, conſequently, all the Secretions, and injures the Nerves, by inducing Spaſms, Convulſions, Tremblings, Difficulty of Breathing, and at length Suffocation. The Tincture of Orpiment converts theſe adulterated Wines inſtantly into a black Colour; hence all Wines ought to be rejected, which are thus tranſmutable.

Inſtances of unregarded Abuſes, ſeemingly trivial, are innumerable; therefore whoever obſerves the Hint, purſues the Buſineſs, and elucidates the Subjects, muſt infallibly obtain the grateful Applauſe of all who are compaſſionately inclin'd to prevent and relieve the unhappy Afflictions of their Fellow-Creatures.

F I N I S.

ADVERTISEMENT.

IF there is any Thing contain'd in this Eſſay which the Reader may not perfectly comprehend, the Author will readily endeavour to explain the Difficulty to any one, who ſhall apply to him, at his Houſe in East-Smithfield.